



UNITED STATES PATENT AND TRADEMARK OFFICE

lpm

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/747,345	12/22/2000	Eric A. Udren	98-PDC-165	9252
7590	06/21/2004		EXAMINER	
Martin J. Moran Cutler Hammer Technology & Quality Center 170 Industry Dr., RIDC Park West Pittsburgh, PA 15275-1032			KITOV, ZEEV	
			ART UNIT	PAPER NUMBER
			2836	
			DATE MAILED: 06/21/2004	

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/747,345	UDREN, ERIC A.	
	Examiner	Art Unit	
	Zeev Kitov	2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 22 December 2000.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1 - 16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1 - 16 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 22 December 2000 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 6 and 7 recite the limitation "said overload relay". There is insufficient antecedent basis for this limitation in the claims. For purpose of examination the terms were interpreted as "the overcurrent relay".

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 - 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elmore (US 4,538,195) in view of Mentler (US 4,089,033). Elmore discloses most of the elements of claim 1 including a distributed bus differential relay system for an electric power distribution system having a bus (element 12 in Fig. 1), a plurality of feeder lines including at least one feeder line (leftmost elements A, B, C in Fig. 1) supplying power to the bus and the remaining feeder lines connected to draw power from the bus, and a plurality of circuit breakers (elements 28, 32 and 18 in Fig. 1), each connecting an associated one of the feeder lines to the bus, the relay system includes: a plurality of

current transformers (elements 22, 24, 26, 36, 38, 40, 48, 50 and 52 in Fig. 1) each measuring current in an associated feeder line and a plurality of differential relay elements (elements 20, 34 and 46 in Fig. 1), each associated with one of the circuit breakers for tripping the associated circuit breaker in response to predetermined voltage conditions in the inputs of its evaluation circuit (elements 58, 68 and 76 in Fig. 1). However, it does not disclose a set of leads connecting the plurality of current transformers in parallel.

Mentler discloses the set of leads (leads connected to the wires 70 and 72 in Fig. 1) connecting the plurality of current transformers in parallel. Both references have the same problem solving area, namely providing differential relay scheme of protection to the power supply customers. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the Elmore solution by adding the set of leads connecting the plurality of current transformers in parallel according to Mentler, because (a) as well known in the art, for the current summation the current sources are to be connect directly in parallel, (b) it is common sense to use current transformers directly connected, rather than using the radio or telecommunication channels for data exchange between the relays when it is feasible; it brings substantial saving of equipment.

Regarding Claim 2, Elmore discloses the differential relay elements (elements 20, 34 and 46 in Fig. 1) including voltage responsive devices (elements 58, 68 and 76 difference in the inputs of the voltage responsive devices. In the system of Elmore modified according to Mentler, the tripping will be performed in response to a persistent

voltage across the leads above a predetermined value. A motivation for modification of the primary reference is the same as above.

Regarding Claim 3, Elmore discloses the bus and feeder lines, which are multi-phase, the current transformers (elements 22, 24, 26, 36, 38, 40, 48, 50 and 52 in Fig. 1) are associated with each phase of each feeder line, and the differential relay elements are multi-phase differential relay elements (elements 58, 68 and 76 in Fig. 1) associated with each circuit breaker and responsive to predetermined voltage conditions across any of the phase leads to trip the associated circuit breaker. In the system of Elmore modified according to Mentler, the set of leads will include phase leads connecting the current transformers associated with each phase in parallel. A motivation for modification of the primary reference is the same as above.

Regarding Claim 4, Mentler discloses the circuit breakers having low energy trip devices and the differential relay elements powered by the associated current transformer and generating a low energy trip signal which trips the low energy trip device of the associated circuit breaker (see Fig. 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the low energy trip devices and feeding the system by the current from the current transformer, since such method of power supply is widely used in the art and becomes a common knowledge.

Regarding Claims 5, 6 and 8, Elmore discloses the system, wherein each circuit breaker has an overcurrent relay (elements 58, 68 and 76 in Fig. 1), which actuates the low energy trip device in response to certain conditions of measured current and the

current transformers associated with each feeder line provide measured current to the overcurrent relay of the associated circuit breaker.

Regarding Claims 7, Elmore discloses the system, which performs complex communication and data processing functions. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Elmore solution by adding the microprocessor, since such method of providing communication and data processing functions is widely used in the art and becomes a common knowledge.

Claims 9, 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elmore in view of Mentler and further in view of Granville (US 5,181,026). Claims 9 and 13 differ from Claim 1 by the limitation of a voltage-limiting device, i.e. varistor. Granville discloses the voltage-limiting device (element 71 in Fig. 1a) connected across the outputs of the current transformer (element 14 in Fig. 1a) for limiting the voltage. Both references have the same problem solving area, namely providing monitoring the power transmission lines. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Elmore solution by adding the voltage limiting element across the outputs of the current transformer according to Granville, because as Granville states (col. 14, lines 31 – 37), it is necessary to protect the equipment from faults due to rising power line current.

As per Claim 11, requiring the voltage limiting device in each differential relay, it would have been obvious to one of ordinary skill in the art at the time the invention was

made to have further modified the Elmore solution by placing the voltage limiting device across the outputs of each current transformer, because otherwise, the differential relays equipment will not be fully protected.

Claims 12, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elmore in view of Mentler and Granville and further in view of Webb (US 5,982,597). Claim 12 differs from Claim 11 by its limitation of a shorting device. Webb discloses the voltage-limiting device (varistor) having additional thermal protection by shorting when the device is overheated (See Abstract). Both references have the same problem solving area, namely protecting the equipment against overvoltages. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Elmore solution by adding the shorting mechanism into the varistor according to Webb, because as Webb states (col. 1, lines 46 – 63), the overheating of the varistor can jeopardize its protection ability.

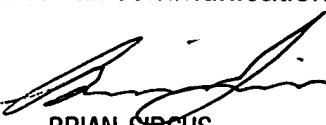
Regarding Claims 14 and 15, Webb discloses the shorting mechanism, which acts after some period of time, quite sufficient for tripping of the circuit breaker. As well known in the art, the heating of the matter by the electric current is a function integral of the voltage (current) over period of time. Therefore, the shorting mechanism acts by integrating the applied voltage (current) with respect to the time. The motivation for modification of the primary reference is the same as above.

'Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Elmore in view of Mentler, Granville, Webb and further in view of Alley et al. (US 4,701,680).
Claim 16 differs from Claim 15 by its limitation of including resistor in series with varistor. Alley et al. disclose the varistor (element 31 in Fig. 3) connected in series with the resistor (element 32 in Fig. 3). Both references have the same problem solving area, namely providing high voltage protection by using varistors. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Elmore solution by adding the resistor in series with the varistor according to Alley et al. because according to Alley et al. (col. 4, lines 36 – 64), it serves two purposes: (a) it adjusting the threshold of activation of the varistor, and (b) the voltage drop across the resistor is used to activate the additional protection mechanism, such as changing the dimming level.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zeev Kitov whose current telephone number is (571) 272 - 2052. The examiner can normally be reached on 8:00 – 4:30. If attempts to reach examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571) 272 – 2800, Ext. 36. The fax phone number for organization where this application or proceedings is assigned is (703) 872-9306 for all communications.

Z.K.
06/16/2004



BRIAN SIRCUS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800